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TITLE

**Evincing the Role of *Rasayana* (Rejuvenation) Therapy in Managing
Cancer and the Side Effects of Chemotherapy and Radiation**

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Evincing the Role of *Rasayana* (Rejuvenation) Therapy in Managing Cancer and the Side Effects of Chemotherapy and Radiation

Cancer is an abnormal growth of the cells in an uncontrolled manner. It is the second most common non-communicable diseases which every individual prays of not being affected with, where the available treatment options are more awful than the disease itself. There are more than 100 varieties of cancer identified till date and are classified or group based on their origin (cells) or place of affliction (organ). An estimated number of around 2.5 million people are living with cancer in India alone. [1] Every year, over 7 lakh new cancer patients are registered and one woman dies of cervical cancer every 8 minutes in India. [2] Even though survivability of cancer affected patients have increased with development of chemotherapy & radiation therapy, the adverse effects have depreciated the quality of life in these patients. There are approximately more than 45 reported physical symptoms and 28 non physical symptoms as the adverse effects of the cancer therapies. [3] A lot of support and money for research to develop successful treatment modalities for cancer and to combat the adverse reactions of the chemotherapy and radiation have been poured in by many countries worldwide, however nothing substantial has been achieved till date.

“Knowledge is nothing until applied” Ayurveda, the traditional medical wisdom of India imbibes a rich knowledge which when applied at right period can provide appreciating results. It is the only system of medicine which considers promotion of health and management of disease as the integral part of each other.

Rasayana Karma (Rejuvenation) has been identified as a separate branch of medicine in Ayurveda. Adaptogens, vitalisers, immune-modulators, rehabilitators, vigour promoters, etc. are the various modern nomenclatures denoted for *Rasayana*. These different modern equivalent nomenclature of *Rasayana Karma* maybe in terms of the various purported actions intended, however rejuvenation would be an apt terminology which encompasses all the actions, the therapy intends to do. The word *Rasayana* comprises of two words, *Rasa* + *Ayana*, where *Rasa* is said to be the essence of the digested food/medicinal substances and *Ayana* is the process of circulating these essence all throughout the body to bring in biological transformations in subsequent body tissues.

Acharya Charaka, the ancient Indian seer, in his classic “*Charakasamhita*” has very critically dealt with the

concept of *Rasayana*. [4] Where he describes, *Bheshaja* (medicine) to be of two types, the primary type being known as *Urjaskara* (invigorators) and the secondary as *Roganuth* (disease/symptoms alleviators). [5] Perhaps this is one of the significant contribution of the Ayurvedic science to the mankind that no other sciences have offered till now. All the contemporary sciences aim at developing medicines or methodology to alleviate the diseases or symptoms, in contrary Ayurveda serves the dual purpose. In other words *Urjaskara* are the type of drugs which helps the individual to maintain his health and make him less susceptible to affliction from the diseases. Further he mentions that the drugs purported for *Urjaskara* actions not only possess invigoration properties, but also acts as disease alleviators. The main benefits of *Rasayana Karma* lies in bestowing the individual with long life, freedom from diseases, maintain youthfulness, excellence of lustre, complexion and voice, favourable strength of body and sense through optimal functioning of all body organs.

Rasayana and *Vajikarana* (virilification) are the two types of *Urjaskara* treatment principles explained in Ayurveda. [6] The process of *Rasayana* can be achieved with various methods, however detoxification or purification of body is a standard pre-requisite before administering *Rasayana*. With the help of either a single or group of drugs of various origins viz. herbal, mineral, herb-mineral and animal the intended benefits of *Rasayana Karma* can be achieved. To support the ancient claims made by the *Acharya* of Ayurveda, recent scientific studies have shown therapeutic benefits of the above origin products possessing *Rasayana* properties, which can help in alleviating the cancer and adverse reaction of the anti-cancerous therapies viz., nausea, vomiting, mucositis, skin reaction, tastelessness, xerostomia, fatigue & change in voice.

An Ayurvedic formulation, *Rasayana Avaleha*, was evaluated for its role as an adjuvant medication to modern radiation therapy and chemotherapy in 36 cancer patients, it was observed that *Rasayana Avaleha* gave better results in controlling the adverse effect of chemotherapy and radiotherapy in comparison with the control group in which only the above therapies were administered. [7]

The role of *Yashtimadhu Ghrita* (processed ghee of *Glycyrrhiza glabra*) in minimizing the radiation induced adverse reactions like mucositis, skin reaction, xerostomia, change in voice etc. upon 75 patients who

had received radiotherapy and chemotherapy for maximum duration of 7 weeks was evaluated. The intensity of radiation and chemotherapy induced mucositis was reduced to a great extent by the trial drug in patients of cancer, especially of the head and neck region. It proved to be beneficial in two ways: (i) No interruptions in the treatment, and (ii) food intake was not severely affected leading to maintenance of nutritional status of the patients. [8]

The efficacy of *Swarna Bhasma* (SB) containing gold particles on solid malignancies was studied on a total of 43 patients who received SB for 1 year. Seventeen patients showed response. The response was best in rectal cancer group 70% (7/10). Nearly 41.02% patients survived for 1 year after treatment but after 5 years this came down to 15.38%. [9] Gold is described as one of the best *Rasayana* Drug in old age by Ayurveda. [10, 11] Gold-silica nano shell has been used in Nano shell-Assisted Photo-T thermal therapy (NAPT) to kill tumour cells by near Infra-Red (IR) light. [12] Its use in chronic lymphocytic leukaemia have also shown good results. [13]

Study conducted on the cases of low grade non Hodgkin's lymphoma and resistant intermediate and high grade non Hodgkin's lymphoma by employing *Triphaladhi Rasayana* [15 grams of powder with ghee and honey) twice daily morning & at bed time with milk as *Anupana* (adjuvant)] for period of 1 month along with selected *Yoga Asana* and *Niyama* (restrictions) showed significant changes in lymph node enlargement, hepatomegaly and splenomegaly. [14]

78 patients of treated head and neck cancers were randomly selected for a study to assess the adjuvant efficacy of *Varunadi Ghrittha*. 38 patients received *Varunadi Ghrittha*, 5 gm twice daily for one year and followed up to two years. 40 patients were followed up at regular intervals with only routine treatment procedures. Immune parameters assessed in the peripheral blood at base line and at the end of administration of the study compound revealed significantly higher mean percentage increase in CD3, CD19 and CD16 positive cells compared to the control group indicating an immunomodulatory effect of the study compound. A non-significant improvement in disease control was observed in patients with advanced stage of disease in the intervention group. [15]

One of the earliest reported study, which was conducted upon 5 patients of cancer (No mention of type of cancer in article) with the *Varandi Kwatha* (decoction form) along with *Kanchanara Guggulu* tablets, *Rasa Sinduram* and *Khadir Arishtam* administered orally in different combinations. Additional for *Abhyanga* (massage), *Kottamchukkadi Thailam*

and *Pinda Thailam* were used and in some cases treatment like *Navarakizhi* had been given. Cell mediated immunity of multi model Ayurvedic treatment modalities were assessed. T cell count estimated after one month of treatment in cancer patients showed a slight enhancement after receiving Ayurvedic Treatment; but the B cell count remained the same. [16]

An open-label non-randomized clinical trial with black box design was conducted upon 22 patients of Oral Sub Mucosal Fibrosis (pre-malignant condition) by using of holistic Ayurvedic approach for 2 months. In all of them after *Koshthashuddhi* (clearing of bowels by mild purgation), *Shodhana Nasya* (errhine therapy); *Pratisarana* (external application) with *Madhupippalyadi Yoga*, *Kavala* (gargling) with *Ksheerabala Taila* and internally *Rasayana Yoga* was given and followed up for 1 month. The study revealed statistically highly significant relief in almost all signs and symptoms like *Mukhadaha* (burning sensation in mouth), *Rasagyanata* (taste), *Lalasrava* (salivation), *Katu Rasa Asahishnuta* (intolerance to spicy food in comparison to previous tolerance), *Mukha Vedana* (pain in mouth), Color of oral mucosa, Ulceration in mouth, Consistency of the mucosa on palpation, Fibrous bands on palpation as well in increasing inter incisor distance. Furthermore, sustained relief was found in follow-up period. [17]

Overview of the results of above preliminary clinical trials reveal that most of the medicines formulations used possess *Rasayana* properties and have produced effectiveness in managing the disease conditions and the side effects caused by the current available treatment modalities to a larger extent. Even though the results in some study are only to a minimal extent statistically, the clinical benefits cannot be ruled out and these studies indeed open a door for the avenue for greater research work.

The effect of *Rasayana* can be availed not only through internal administration of oral medication but also through therapeutic procedures indicated in Ayurveda viz *Panchakarma*. These are the set of five procedures (emesis, purgation, enema, errhine and bloodletting) which detoxifies or purifies the body from the accumulated wastes thereby paving way for enhanced activity of various bodily functions to their expected optimal levels. In few instances these procedures by themselves have benefits of rejuvenation when administered judiciously. One of the prerequisite for administering *Rasayana* drugs is purification of body through one of the above *Panchakarma* procedures as it enhances the action of the drugs used for *Rasayana* purpose by improving their absorption. Being closely related to nature, the therapeutic medicines and procedures practiced in the Ayurvedic science can help in producing rejuvenating effects at various levels by creating an homeostasis in the body and thereby help in combating cancer and the side effects of chemotherapy and radiation.

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